Onderzoek naar de verdeeling van agglutininen over de serumeiwitten

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SUMMARY.

1. From salting-out curves obtained by means of $(NH_4)_2SO_4$ with normal rabbit and horse sera, it is evident that — in accordance with the general opinion — at least two different proteins, globulin and albumin, exist in these sera. A sharp separation cannot be realised by a 50 % saturation. With rabbit serum the boundary between the two proteins rather seems to be at a saturation of 56—60 %, whereas with horse serum the precipitation of globulin gradually merges into the precipitation of albumin.
2. A wide zone between the precipitation of globulin and albumin, as assumed by earlier investigators, does not exist. The method applied bij KAUDER, by means of which such a zone was detected, has been proved to be incorrect. By a direct saturation to a certain percentage more protein is precipitated than if $(NH_4)_2SO_4$ is added successively in two separate portions, even if the first obtained precipitate is not removed from the solution.
3. An indication of the existence of eu- and pseudoglobulin cannot be derived from the curves; both a zone and an acute angle are missing.
4. In immune rabbit and horse serum — in agreement with the literature — the globulin has increased and the albumin decreased. This applies especially to horse serum. Here also the total protein content has increased.
5. In both immune sera, as well as in the normal sera, a zone between the precipitation of globulin and albumin is absent. With rabbit serum the curves exhibit a distinct transformation at 60—62 %, indicating precipitation of albumin. In the curves from horse serum hardly any indication of the existence of albumin is detectable.
6. All globulin fractions which are precipitated under a saturation of 46—50 % with $(NH_4)_2SO_4$ contain agglutinins. In this respect no difference between sera of rabbits and horses was found. The use of different species of bacteria as antigens does not influence the results.
7. The distribution of the agglutinins over the protein which precipitates under a saturation of 46—50 % is fairly regular. Agglutination curve and globulin curve are nearly parallel. Solutions of different globulin fractions with equal protein contents have nearly the same agglutinin titre. It must however be considered that the titre of a serum can only be approximately determined.
8. As the boundary between globulin and albumin is not at a saturation of 46—50 %, it must be assumed that the protein precipitating between a saturation of 46—50 % and 60—62 % is composed of immunological inactive globulin, probably mixed with albumin.
9. Either assuming that agglutinins are combined with a special protein or that they are protein themselves, modelled under the influence of the antigen and constituted in such a way as to react specifically with the antigens, in any case this protein must be closely related to the normal globulin, because it is precipitated by $(NH_4)_2SO_4$ in the same way as the normal globulin.